Supreme Court, U.S.
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No. 88-747

IN THE

Supreme Court of the United States

OCTOBER TERM, 1988

ALLIED CORPORATION,

Petitioner,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,

Respondent,

and

HITACHI METALS, LTD., ET AL., VACUUMSCHMELZE GmbH, NIPPON STEEL CORPORATION, ET AL., and SIEMENS CAPITAL CORP.,

Respondents.

APPENDIX TO PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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October 31, 1988

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Court of Appeals Opinion
June 29, 1988

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

87-1455, -1616

ALLIED CORPORATION,

Appellant,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,

Appellee,

and

HITACHI METALS, LTD., ET AL.,
VACUUMSCHMELZE GmbH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,

Intervenors/Appellees.

David W. Plant, Fish & Neave, of New York, New York, argued for appellant Allied. With him on the brief were *David J. Lee, Eric M. Lee, Christopher B. Garvey* and *Robert A. Musicant.* Also on the brief were *Brian D. Forrow* and *David M. McConoughey,* Allied Corporation, of Morristown, New Jersey, of counsel.

Jean H. Jackson, Office of the General Counsel, U.S. International Trade Commission, of Washington, D.C., argued for appellee ITC. With her on the brief were *Lyn M. Schlitt,* General Counsel and *James A. Toupin,* Assistant General Counsel.

Court of Appeals Opinion

Thomas J. Macpeak, Sughrue, Mion, Zinn, Macpeak & Seas, of Washington, D.C., argued for intervenor Hitachi. With him on the brief were *Waddell A. Biggart* and *Sheldon I. Landsman.* Also on the brief were *Alan J. Neuwirth, Michael Doherty* and *Richard Mescon,* Webster & Sheffield, of New York, New York, of counsel.

John D. Simpson, Hill, Van Santen, Steadman & Simpson, of Chicago, Illinois, argued for intervenor Vacuumschmelze. With him on the brief was *Steven H. Noll.* Also on the brief was *Tom Schaumberg* and *Alice Kipel,* Howrey & Simon, of Washington, D.C., of counsel.

Thomas L. Creel, Kenyon & Kenyon, of New York, New York, argued for intervenor Nippon. With him on the brief were *Edward W. Greason, Robert T. Tobin, Philip J. McCabe, John J. Kelly, Jr.* and *Richard M. Rosati.*

Appealed from: U.S. International Trade Commission

Court of Appeals Opinion

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

87-1455, -1616

ALLIED CORPORATION,

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HITACHI METALS, LTD., ET AL.,
VACUUMSCHMELZE GmbH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,

Intervenors/Appellees.

DECIDED: June 29, 1988

Before MARKEY, *Chief Judge,* DAVIS* and ARCHER, *Circuit Judges.* MARKEY, *Chief Judge.*

Consolidated appeals from an Advisory Opinion of the United States International Trade Commission (ITC), Investigation No. 337-TA-143 (May 28, 1987) (Appeal No.

* Circuit Judge Davis, who died on June 19, 1988, took no part in the decision of this case.

87-1455), and from a Modified General Exclusion Order, *Id.* (June 17, 1987) (Appeal No. 87-1616). We dismiss the appeal from ITC's Advisory Opinion for lack of jurisdiction and affirm the Modified General Exclusion Order.[1]

BACKGROUND

These appeals arise out of further developments in the 1983-84 ITC Investigation No. 337-TA-143, *In the Matter of Certain Amorphous Metals and Amorphous Metal Articles. See* USITC Publication 1664 (Nov. 1984); 49 Fed. Reg. 42803 (October 24, 1984).

A. The 1983-84 Investigation

On March 11, 1983, ITC commenced Section 337 proceedings (19 U.S.C. § 1337 (1982 & Supp. 1984)) against several importers of steel products, including parties to this action Hitachi Metals Ltd. (HML), Nippon Steel Corporation (NSC), Vacuumschmelze GmbH (VAC) and Siemens Capital Corp. (Siemens). In part, ITC investigated whether the processes used to make the imported products would infringe Allied Corporation's (Allied's) U.S. Patent No. 4,271,257 (the '257 patent) on a "method of forming continuous strip of amorphous metal" if such processes were carried out in the United States. ITC referred the investigation to an administrative law judge (ALJ) to conduct an evidentiary hearing and to issue an initial determination (ID).

The ID issued May 14, 1984. The ALJ construed the claims and determined that all respondents except HML had violated § 337 and § 337(a) by importing amorphous metal articles made by processes which would infringe the '257 patent if such processes were practiced in the United States.

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[1] Related cross-appeals (87-1493 & 87-1642) by Nippon Steel Corp. and Nippon Steel U.S.A., Inc. were dismissed by unpublished Order June 16, 1988.

Before the ALJ, respondents argued that the '257 claims were "fatally indefinite and ambiguous" (35 U.S.C. § 112) and that the invention recited in those claims would have been obvious in light of the prior art (35 U.S.C. § 103). Both arguments were rejected, however, because the ALJ interpreted the word "nozzle" as including the feature of wide lips.

> It is found that the word 'nozzle' as used in the '257 patent claims is ambiguous as to the structure of the nozzle, and that the specification can be used to construe this word. The '257 claims are construed as including the critical feature of the wide lips on the nozzle.

Inv. No. 337-TA-143, Initial Determination 44 (May 14, 1984) [hereinafter 1984 ID].

The ALJ left no doubt as to her interpretation of the scope of the '257 patent's claims:

> If the claims of the '257 patent are valid, it is only because the critical limitation relating to the width of the lips was read into the claims. If a respondent used a nozzle without wide lips, infringement could not be found.

Id. at 64.

Respondents and Allied petitioned the Commission for review. Respondents contended that the ALJ erroneously "preserved" the validity of the '257 patent by "reading in the limitation concerning wide lips." In response, Allied took the position that no review of the ALJ's claim construction and validity holdings was necessary.

> The ALJ found the word "nozzle" to be ambiguous and used the patent specification to *construe* this word to include "wide lips." The fault is not with the decision of the ALJ, but with the obvious mis-

> characterization of that holding by Respondents. No review of this issue is necessary. (Emphasis in original)

Allied went so far as to urge that the ALJ *correctly* construed "nozzle" to include the wide lips limitation.

> [T]he ALJ has correctly found that "[t]he '257 claims are construed as including the critical feature of the wide lips on the nozzle." The ALJ did not read Dr. Narasimhan's melt constraint or support theory into the '257 process claims.

In its petition for review, and in its response to respondents' petition for review, Allied argued that "the holding by the ALJ concerning the validity of the '257 claims when read *literally* is in error." At no point did Allied contend that the claim construction pertaining to "wide lips" was error.

ITC declined to review the ID, making it final. 19 C.F.R. § 210.53(h) (1988).[2] On August 1, 1985, ITC issued this Amorphous Metal Exclusion Order:

> Amorphous metal articles manufactured abroad in accordance with the process set forth in claims 1, 2, 3, 5, 8, and/or 12 of U.S. Letters Patent 4,221,257 are excluded from entry into the United States for the remaining term of said patent . . . .

B. The 1985-87 Proceedings

In early 1985 ITC granted petitions for advisory opinion proceedings filed by HML and VAC who sought advice that the importation of amorphous metal products made by their "new-

---

[2] Allied did appeal from that final decision. *Allied Corp. v. United States Int'l Trade Comm'n*, 782 F.2d 982, 228 USPQ 1532 (Fed. Cir. 1986). That appeal concerned two other patents, however, and did not relate to any issues involved here. Allied's appeal was dismissed as untimely. *Id.* at 984, 228 USPQ at 1533.

ly developed" processes would not violate the Amorphous Metal Exclusion Order or section 337. *See* 19 C.F.R. § 211.54(b) (1988). ITC *sua sponte* initiated exclusion order modification proceedings, *see* 19 U.S.C. § 337(h); 19 C.F.R. § 211.57, with HML, VAC, NSC and Siemens as parties. The advisory opinion and exclusion order modification proceedings were consolidated for hearing.

On March 3, 1986, the ALJ issued an initial advisory opinion (IAO) and recommended determination (RD) on modification of the exclusion order. In the IAO and RD, the ALJ determined that the "new" HML and VAC processes did not infringe the '257 patent claims as interpreted by ITC in the original investigation, and recommended modification, accordingly, of the exclusion order. Allied petitioned ITC to review the ALJ's IAO and RD.

1. Advisory Opinion

On May 28, 1987, ITC issued its advisory opinion, which supplemented and modified the ALJ's IAO, but did not change its result. In particular, ITC stated:

> We reject Allied's arguments for redetermining the scope and validity of the '257 patent claims. Under the doctrine of law of the case . . . that decision should continue to govern the same issues in subsequent stages in the same case.
>
> . . . .
>
> Apart from the application of law of the case to these proceedings, we note that Allied agreed not to litigate the issue of claim interpretation in the advisory opinion proceedings. Indeed, at the end of the original investigation, Allied embraced the claim interpretation necessary to preserve the '257 patent's validity in the original investigation.

Investigation No. 337-TA-143, Advisory Opinion Proceeding, Views of the Commission at 11-12 (May 28, 1987) (footnotes omitted).

Citing the earlier claim construction of "nozzle" to include a "wide lips" limitation as recited in the specification, ITC "construe[d] the wide nozzle lips to be of the dimensions set forth in the 'Summary of the Invention' set forth in the '257 patent specification." *Id.* at 15.[3] ITC concluded that: "in order for respondents' processes to literally infringe the claims of the '257 patent, they must utilize a front casting nozzle lip that is at least 1.45 times as wide as the width of the casting nozzle's slot." *Id.* at 15-16.[4] ITC expressly refrained from determining the upper range of nozzle lips that would fall within the scope of the claims. *Id.* at 15. ITC also found that there was no infringement under the doctrine of equivalents.

2. Modified Order

On June 17, 1987, ITC issued an order modifying its Amorphous Metal Exclusion Order of August 1, 1985. In the Modified Order, paragraph 1 repeated the claim construction set out in the advisory opinion, and paragraphs 3 and 4 set out procedures to be followed by those desiring to import articles "covered" by the order:

> 3. Persons desiring to import amorphous metal articles covered by paragraph 1 of this Order may petition the Commission to institute such further

[3] The '257 specification provides that the "slot must have a width . . . of from about 0.3 to about 1 millimeter" and that "[t]he first [nozzle] lip must have a width at least equal to the width of the slot, and the second [nozzle] lip must have a width of from about 1.5 to about 3 times the width of the slot." *See id.* at 15.

[4] Based on expert testimony, ITC construed the word "about" in the claims "to allow a variance of up to .05 at the lower end of the front nozzle lip ratio range." *Id.* at 15 n.45.

> proceedings as may be appropriate in order to determine whether the amorphous metal articles sought to be imported fall outside the scope of paragraph 1 of this Order, and therefore should be allowed entry into the United States.
>
> 4. Persons desiring to import amorphous metal articles covered by this Order shall certify to the U.S. Customs Service that the amorphous metal articles sought to be imported were manufactured by a process that the U.S. International Trade Commission has determined to be outside the scope of paragraph 1 of this Order. . . .[5]

Allied appealed from the Advisory Opinion and from the Modified Exclusion Order.

ISSUES

(1) Whether this Court has jurisdiction over either appeal.

(2) Whether Allied waived its right to challenge ITC's claim construction.

(3) Whether ITC's finding of noninfringement under the doctrine of equivalents is supported by substantial evidence.[6]

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[5] Exclusion Orders requiring an importer to certify that the article sought to be imported was manufactured by a process that the Commission has determined would not infringe a U.S. patent if practiced in the United States are common where a process patent is at issue and there is no way to discern by inspection of the imported article whether that article was manufactured by an infringing process. *See, Certain Multicellular Plastic Film,* Inv. No. 337-TA-54, *aff'd, Sealed Air Corp. v. United States Int'l Trade Comm'n,* 645 F.2d 976 (CCPA 1981).

[6] Allied's arguments concerning literal infringement deal only with claim construction and thus are entirely answered by our discussion of waiver, *infra.*

OPINION

I. Jurisdiction

A. Statutory Framework

Under 28 U.S.C. § 1295(a)(6) (1982) this court has exclusive jurisdiction over "the final determinations of the United States International Trade Commission relating to unfair practices in import trade, made under section 337 of the Tariff Act of 1930 (19 U.S.C. 1337)." The "final determinations" appealable to this court are specified in section 337(c) (Supp. 1984):

> The Commission shall determine, with respect to each investigation conducted by it under this section, whether or not there is a violation of this section. . . . Any person adversely affected by a final determination of the Commission under subsection (d), (e), or (f) of this section may appeal such determination, within 60 days after the determination becomes final, to the United States Court of Appeals for the Federal Circuit for review in accordance with chapter 7 of ~~Title 5.~~ Notwithstanding the foregoing provisions of this subsection, Commission determinations under subsections (d), (e), and (f) of this section with respect to its findings on the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers, the amount and nature of bond, or the appropriate remedy shall be reviewable in accordance with section 706 of Title 5.

Section 337(d) reads:

> **~~(d)~~ Exclusion of articles from entry**
>
> If the Commission determines, as ~~a~~ result of an investigation under this section, that there is a viola-

> tion of this section, it shall direct that the articles concerned . . . be excluded from entry into the United States, unless, after considering the effect of such exclusion upon the public health and welfare . . . it finds that such article should not be excluded from entry.

Section 337(h) is also of interest here:

> **(h) Period of Effectiveness**
>
> Except as provided in subsections (f) and (g) of this section, any exclusion from entry or order under this section shall continue in effect until the Commission finds . . . that the conditions which led to such exclusion from entry or order no longer exist.

B. Advisory Opinion

That an agency may choose to render advisory opinions cannot create for one displeased with its advice a cause of action cognizable in an Article III court. A federal court's jurisdiction is limited to that conferred by Congress. *See Palmore v. United States*, 411 U.S. 389, 401-402 (1973); *Sundback v. Blair*, 47 F.2d 378, 380, 8 USPQ 220, 222 (CCPA 1931) (rules of administrative agency alone cannot confer appellate jurisdiction); *see also Arctic Corner, Inc. v. United States*, 845 F.2d 999, 1001 n.2 (Fed. Cir. 1988).

ITC Advisory Opinions (19 C.F.R. § 211.54(a), (b) (1987)) are not reviewable by this court because they are not "final determinations" required by sections 337(c) and 1295(a)(6). Section 211.54(c) provides that "[t]he Commission may at any time reconsider . . . any advice given under this section and, where the public interest requires, rescind or revoke its prior . . . advice." ITC's published comments on § 211.54 state: "Since . . . advisory opinions are not binding, they are not final orders and therefore not appealable." 46 Fed.

Reg. 17,526, 17,527 (March 18, 1981) (citing *Floersheim v. Weinburger*, 346 F. Supp. 950 (D.D.C. 1972)) [hereinafter ITC Comments].

ITC's attempt here to create a distinction between determinations under § 211.54 that are "truly advisory," because they do not result from "formal proceedings of the APA type," and determinations under § 211.54 that are not "truly advisory," because they result from proceedings that "effectively determine[] [an issue] as a final matter," is disingenuous, as is its assertion that the Customs Service treats ITC advisory opinions as binding. This court's jurisdiction cannot be made to turn upon such manipulatable criteria.

What counts in determining our jurisdiction is not the nature or thoroughness of the agency proceeding, but the effect of the agency determination. We reject the notion that an agency may issue what it calls "advisory" opinions and attempt to make some appealable and some not appealable on the basis of its selection among types of proceedings, or on the basis of how those opinions are treated by other agencies such as the Customs Service. If ITC wants one of its pronouncements to have effect as a final determination, it knows how to accomplish that objective without issuing opinions that may or may not be "truly advisory."[7] Put simply, the lack of finality, inherent in the word "advisory" and set out in § 211.54(c) itself, dooms review. *Cf. Block v. United States Int'l Trade Comm'n*, 777 F.2d 1568, 1571, 228 USPQ 37, 38-39 (Fed. Cir. 1985) (rejecting ITC argument that terminating investigation is in effect a final determination).

ITC's reliance on *Canadian Tarpoly Co. v. United States International Trade Commission*, 640 F.2d 1322, 1325, 209

[7] It is well established that "[a]dvisory opinions differ from declaratory orders in their lack of reviewability and in their lack of binding effect . . . ." K. Davis, *Administrative Law Treatise* § 4.09 at 265 (1958).

USPQ 33, 35 (CCPA 1981), is misplaced, for it does not support ITC's theory that some of its "advisory opinions" are appealable. *Canadian Tarpoly* was a petition for mandamus case involving an original exclusion order that, like the present Modified Order, and unlike the Amorphous Metal Exclusion Order, expressly provided for a subsequent proceeding to determine whether importation of a particular product would be allowed. An affirmative answer in that subsequent proceeding would automatically modify the existing exclusion order. Nothing in *Canadian Tarpoly* dealt with "advisory opinions" or § 211.54. Indeed, as there set out, petitioner declined ITC's suggestion that it seek an advisory opinion.[8]

Because we hold that this court has not been granted statutory authority to review ITC advisory opinions, we need not discuss the "case or controversy" provision of Article III of the Constitution. *See Ellis v. Brotherhood of Ry., Airline & S.S. Clerks*, 466 U.S. 435, 444 (1980); *Rescue Army v. Municipal Court*, 331 U.S. 549, 568-74 (1947).

C. The Modified Exclusion Order

NSC argues in a motion to dismiss that "this court has no jurisdiction to hear appeals from a modified exclusion order" because: (1) § 337(c) limits our review to ITC determinations under sections 337(d), (e), or (f); (2) authority for exclusion order modification proceedings is found in § 337(h); (3) § 337(d) is "completely silent as to exclusion order modi-

[8] In denying mandamus in *Canadian Tarpoly*, this court indicated that petitioner could appeal "if adversely affected by a final determination" in the modification proceeding. That view was repeated in *SSIH Equip. S.A. v. United States Int'l Trade Comm'n*, 673 F.2d 1387, 1390, 213 USPQ 529, 531 (CCPA 1982). At the time of *Canadian Tarpoly* and *SSIH*, there was no time set for appeal from original exclusion orders. Now that original exclusion orders become unappealable after 60 days, neither *Canadian Tarpoly* nor *SSIH* can be read as approving appeals from refusals to modify exclusion orders. That question is not before us in this case.

fication proceedings"; and (4) § 337(c) puts a 60-day limit on appeals.

NSC further argues that although this court "in specific procedural contexts has addressed appeals involving modified exclusion orders or arguably has stated it could do so," "all such cases were decided prior to the amendments to 19 U.S.C. § 1337 . . . placing a 60 day time limit on appeals from final determinations of the ITC."[9]

NSC's reading of § 337(c) is too restrictive in requiring a specific statutory provision for review of Modified Orders when the statute provides for review of original orders. NSC's view disregards the general rule that judicial review will not be precluded on the sole ground that specific procedures for judicial review of a particular agency action are not spelled out in a statute. *Traynor v. Turnage*, 108 S. Ct. 1372, 1378 (1988); *Bowen v. Michigan Academy of Family Physicians*, 476 U.S. 667, 670 (1986) ("strong presumption that Congress intends judicial review of administrative action"); *Fausto v. United States*, 783 F.2d 1020, 1022 (Fed. Cir. 1986), *rev'd on other grounds*, 108 S. Ct. 668, 673 (1988) (finding contrary Congressional intent); *Rosano v. Department of the Navy*, 699 F.2d 1315, 1318 n.13 (Fed. Cir. 1983); *see also* B. Mezines, J. Stein & J. Gruff, *Administrative Law* § 44.02 (1987 revision).[10] NSC cites no showing of " 'clear and convincing evidence' of a contrary legislative intent," *Abbott Laboratories v. Gardner*, 387 U.S. 136, 141 (1967), and we are aware of none.

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[9] *See e.g., SSIH Equip. S.A. v. United States Int'l Trade Comm'n*, 718 F.2d 365 (Fed. Cir. 1983), wherein this court reviewed a modified exclusion order.

[10] No case cited by NSC supports its argument that this court lacks jurisdiction to review a modified exclusion order. NSC's cases deal with the nonanalogous situations (administrative decisions apart from the merits; decisions declining to institute proceedings; decisions to terminate an investigation).

The statutory scheme of section 337 and its accompanying legislative history evidence that Congress did not intend that NSC's overly restrictive view govern judicial review of final determinations on the merits made by ITC under sections (d), (e), and (f). *See* H. Rep. No. 571, 93rd Cong., 1st Sess. 78 (1974) ("Any order of the Commission entered in any proceeding would be subject to judicial review in the CCPA") (quoted in *LSI Computer Sys. v. United States Int'l Trade Comm'n*, 832 F.2d 588, 590 (Fed. Cir. 1987)); S. Rep. No. 1298, 93rd Cong., 2d Sess. 196-97 (1974), *reprinted in* 1974 *U.S. Code Cong. & Admin. News* 7186, 7329 ("under section 337(c) the Committee would extend the right to judicial review of final Commission determinations (of whether there is a violation of section 337 or whether there is reason to believe there is a violation)"); *see also SSIH Equip. S.A. v. United States Int'l Trade Comm'n*, 673 F.2d 1387, 1390 n.9 (CCPA 1982) (§ 1337(c) is "expansive statement of reviewable determinations"); ITC Comments at 17526 ("[A]ctions construable as final Commission actions under the rules, such as substantive modifications to cease and desist orders and the entry or removal of exclusion orders, would be reviewable before the [CCPA]").

ITC finds authority to modify an existing exclusion order in § 337(h), *see* 5 C.F.R. § 211.57 (1987); *cf Young Engineers v. United States Int'l Trade Comm'n*, 721 F.2d 1305, 1312-13, 219 U.S.P.Q. 1142, 1148-49 (Fed. Cir. 1983); yet when it actually modifies that order and issues the modified order it is making an appealable final determination under subsection (d), (e), or (f). The order modifying the existing order inherently relates to the propriety of the exclusion order and affects its validity. *See Viscofan, S.A. v. United States Int'l Trade Comm'n*, 787 F.2d 544, 552, 229 USPQ 118, 124 (Fed. Cir. 1986). The result is the same as that which would prevail if ITC had issued the modified order in the first instance.

The lure of NSC's simplistic reading of the statute evaporates when one realizes that the exclusion and cease-and-desist remedies of sections (d), (e), or (f) come into play only when an investigation has resulted in a finding that section 337(a) has been violated. Under NSC's narrow reading of the statute, a final order refusing to exclude an import because the patent was held invalid would not be appealable. That result would be contrary to the expressed intent of section 337(c). *See* S. Rep No. 1298, *supra; see also Surface Technology, Inc. v. United States Int'l Trade Comm'n*, 801 F.2d 1336, 231 U.S.P.Q. 192 (Fed. Cir. 1986) (reviewing ITC determination of no violation of § 337); *Lannon Mfg. Co. v. United States Int'l Trade Comm'n*, 799 F.2d 1572, 231 USPQ 32 (Fed. Cir. 1986).

The 1984 amendment to section 337(c) mandating a 60-day time limit on appeals from final determinations under subsections (d), (e), or (f), has no effect on our jurisdiction here. Because the Modified Order is itself a final determination under subsection (d), Allied's appeal was timely. It is irrelevant that the appeal was more than 18 months after publication of ITC's Amorphous Metals Exclusion Order. *See Young Engineers*, 721 F.2d at 1312, 219 USPQ at 1149 (12 (or 18) month rule of § 337(b) "means only [that] the conclusion that there is a violation or no violation of § 337(a)" must be made within that time period).

II. Waiver

Allied waived review of the claim construction in the ALJ's 1984 ID by failing to raise the issue in its petition for review of that ID. *See Warner Bros. v. United States Int'l Trade Comm'n*, 787 F.2d 562, 564, 229 USPQ 126, 127 (Fed. Cir. 1986). Allied's effort to now litigate its claim construction issues is improper.

Allied not only waived review, but did so knowingly. ITC's rules require a concise statement of the reasons why

review of the ID is necessary, 19 C.F.R. § 210.54(a)(ii), (iii), (iv) (1988), and provide that any issue not raised in the petition will be deemed abandoned, 19 C.F.R. § 210.54(a)(2) (1988). Moreover, Allied did far more than fail to argue; it affirmatively stated that the ALJ's construction was correct. *Lizut v. Department of the Army*, 717 F.2d 1391 (Fed. Cir. 1983) (petitioner's endorsement of Presiding Official's decision effected a waiver).

Allied's argument that ITC added further claim limitations in the 1987 proceeding is disingenuous. The ALJ's ID states that the '257's specification "indicates that the lips must have a certain width relative to the width of the slot of the nozzle." 1984 ID at 41. Further, the ALJ's finding 336 states that "the minimum width of the first and second lip are given in the specification." ITC's 1987 determination stated those same parameters.

Allied says "ITC's 1987 claim construction . . . convert[s] processes found infringing by ITC in 1984 to noninfringements" because "if the ITC incorporates the 'critical' lower limits in the claims, it must incorporate the no less 'critical' upper limits." The assertion fails because the 1984 and 1987 claim constructions are the same, that in 1987 being merely the listing of the actual parameters referred to in 1984 as being found in the specification. Moreover, Allied's point is that incorporation of the upper limits would have required a finding of noninfringement in 1984, which may account for Allied's failure to raise the argument in 1984. ITC consistently stated that it was not determining the upper limits that might fall within the scope of the '257 patent. What ITC might decide cannot, however, serve as a basis for reversal in this case. *Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423, 223 USPQ 193, 194 (Fed. Cir. 1984) ("this court does not sit to review what the Commission has not decided"), *cert. denied*, 472 U.S. 1009 (1985).

III. Doctrine of Equivalents

Allied's main attack on ITC's finding of nonequivalence rests on the argument that ITC erred in law by "compar[ing] the *lips* of the 'new' processes to the *lips* of Allied's preferred nozzle" (emphasis Allied's), rather than "compar[ing] the 'new' processes to the '257 claimed process." Allied's argument fails because ITC did not do that. ITC assumed that every step of the new process (other than wide lips) was substantially the same as the corresponding limitation found in the '257 process. ITC's opinion evidences that it considered the effect of the lone difference between the HML and VAC processes and the patented process on the working of those processes as wholes. The finding that neither wide lips nor equivalents of those lips were employed in the HML and VAC processes led to an ultimate finding of nonequivalence between those processes and the patented process. That was not error. *See Spectra Corp. v. Lutz*, 839 F.2d 1579, 1582, 5 USPQ2d 1867, 1869-70 (Fed. Cir. 1988); *Pennwalt v. Durand-Wayland Corp.*, 833 F.2d 931, 934-36, 4 USPQ2d 1737, 1739-41 (Fed. Cir. 1987) (in banc), *cert. denied*, 108 S. Ct. 1226, 1474 (1988).

We have carefully reviewed the record in light of the remainder of Allied's arguments regarding equivalence and conclude that substantial evidence supports ITC's finding.

CONCLUSION

Allied's appeal from ITC's advisory opinion is dismissed for lack of jurisdiction. ITC's modified exclusion order is affirmed.

COSTS

Each party will bear its own costs.

DISMISSED-IN-PART AND AFFIRMED-IN-PART

Court of Appeals Judgment
June 29, 1988

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

87-1455, -1616

ALLIED CORPORATION,
Appellant,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,
Appellee,

and

HITACHI METALS, LTD., ET AL., VACUUMSCHMELZE GMBH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,
Intervenors/Appellees.

JUDGMENT

ON APPEAL from THE UNITED STATES INTERNATIONAL TRADE COMMISSION

in CASE NO(S). 337-TA-143

This CAUSE having been heard and considered, it is

ORDERED and ADJUDGED: DISMISSED-IN-PART AND AFFIRMED-IN-PART.

ENTERED BY ORDER OF THE COURT

DATED June 29, 1988

FRANCIS X. GINDHART
Francis X. Gindhart, Clerk

ISSUED AS A MANDATE: AUGUST 11, 1988

Court of Appeals Order
August 1, 1988

Note: This Order has not been prepared for publication in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

87-1455, -1616

ALLIED CORPORATION,
Appellant,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,
Appellee,

and

HITACHI METALS, LTD., ET AL., VACUUMSCHMELZE GMBH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,
Intervenors/Appellees.

Before MARKEY, *Chief Judge,* and ARCHER, *Circuit Judge.*

ORDER

A petition for rehearing having been filed in this case,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, denied.

The suggestion for rehearing in banc is under consideration.

FOR THE COURT:

FRANCIS X. GINDHART

Francis X. Gindhart, Clerk

August 1, 1988

Date

cc: Mr. David J. Lee
Mr. Thomas L. Creel
Mr. Thomas J. Macpeak
Ms. Jean H. Jackson, ITC
Mr. Tom M. Schaumberg
Mr. John D. Simpson

Court of Appeals Order
August 23, 1988

Note: This Order has not been prepared for publication in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

87-1455, -1616

ALLIED CORPORATION,
Appellant,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,
Appellee,

and

HITACHI METALS, LTD., ET AL., VACUUMSCHMELZE GMBH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,
Intervenors/Appellees.

Before MARKEY, *Chief Judge,* and ARCHER, *Circuit Judge.*

ORDER

A suggestion for rehearing in banc having been filed in this case,

UPON CONSIDERATION THEREOF, it is

ORDERED that the suggestion for rehearing in banc is declined.

FOR THE COURT:

FRANCIS X. GINDHART

Francis X. Gindhart, Clerk

August 23, 1988

Date

cc: Mr. David J. Lee
Mr. Thomas L. Creel
Mr. Thomas J. Macpeak
Ms. Jean H. Jackson, ITC
Mr. Tom M. Schaumberg
Mr. John D. Simpson

Court of Appeals Order
August 25, 1988

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT
87-1455, -1616

ALLIED CORPORATION,

Appellant,

v.

UNITED STATES INTERNATIONAL TRADE COMMISSION,

Appellee,

and

HITACHI METALS, LTD., ET AL., VACUUMSCHMELZE GmbH,
NIPPON STEEL CORPORATION, ET AL.,
and SIEMENS CAPITAL CORP.,

Intervenors/Appellees.

Before MARKEY, *Chief Judge*, DAVIS* and ARCHER, *Circuit Judges*. MARKEY, *Chief Judge*.

ORDER

Having reconsidered the Petition for Rehearing, the panel grants that Petition to the extent of ordering the following changes in the opinion. Accordingly,

IT IS ORDERED THAT

On page 7 [A-9], in (2) change "waived" to —abandoned—; in n. 6 change "waiver" to —abandonment—.

On page 15 [A-16], fourth [ninth] line from the bottom (in II.), change "Waiver" to —Abandonment—; in third [eighth] line from the bottom change "waived" to "abandoned".

On page 16 [A-16], line 4 [second line from the bottom] delete everything up to "ITC's".

FOR THE COURT

8-25-88
Date

HOWARD T. MARKEY
Howard T. Markey
Chief Judge

* Judge Davis took no part in the decision in this case.

ITC Determination
May 28, 1987
Excerpts Pages 1-16

PUBLIC VERSION
[Confidential Business Information Deleted]

UNITED STATES INTERNATIONAL
TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN AMORPHOUS METAL ALLOYS AND AMORPHOUS METAL ARTICLES

Investigation No. 337-TA-143 Advisory Opinion Proceedings

VIEWS OF THE COMMISSION[1]

The Commission has determined to affirm, with certain modifications, the initial advisory opinion (IAO)[2] of the administrative law judge (ALJ) with respect to the exclusion order the Commission issued in *Certain Amorphous Metal Alloys and Amorphous Metal Articles,* Inv. No. 337-TA-143. We therefore determined that the processes of respondents Hitachi Metals, Ltd., Hitachi Metals International, Ltd., and Vacuumschmelze GmbH for the manufacture of amorphous metal would not infringe U.S. Letters Patent 4,221,257 (the '257 patent) if practiced in the United States.[3] The Findings of Fact issued with the IAO are adopted to the extent that they are not inconsistent with this opinion.

[1] This opinion contains the following abbreviations: ALJ = Administrative Law Judge; AO-FF = Findings of Fact issued with the Initial Advisory Opinion, March 3, 1986; AO-TR = Transcript of Advisory Opinion Proceedings, Nov. 11-14, 1985; FR = Findings on Hearing on New Evidence and Information Requested on Remand, August 14, 1986; IA = Commission Investigative Attorney; IAO = Initial Advisory Opinion, March 3, 1986; ID = Unreviewed Initial Determination issued in this investigation, Oct. 24, 1984; ID-FF = Findings of Fact issued with the Initial Determination, Oct. 24, 1984; RD = Recommended Determination issued in the Modification of Exclusion Order Proceedings, March 3, 1986; R-TR = Transcript of Hearing on Remand, July 21-23, 1986.

[2] Issued on March 3, 1986.

[3] The '257 patent is the basis for the Commission's exclusion order.

1987 ITC Determination

BACKGROUND

I. Procedural History

An investigation was conducted in 1983 and 1984 to determine whether there was a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation or sale of certain amorphous metal alloys and amorphous metal articles from Japan and the Federal Republic of Germany.[4] After finding a violation in the importation of the accused articles, the Commission issued a general exclusion order which prohibited the entry of amorphous metal articles cast abroad by the processes claimed in claims 1, 2, 3, 5, 8, or 12 of the '257 patent. The '257 patent is owned by complainant Allied Corporation (Allied).[5]

The Commission's final determination in the original investigation (an unreviewed initial determination, hereinafter referred to as the ID) construed the claims of the '257 patent and found that while the respondents' casting processes were infringing, the modification of certain features would avoid infringement.[6] Respondents Hitachi Metals, Ltd. and Hitachi Metals International, Ltd. (collectively, HML), and respondent Vacuumschmelze GmbH (Vac) thereafter claimed to have modified their casting processes to avoid infringement, and requested (1) modification of the Commission's exclusion order under Commission rule 211.57 (19 C.F.R. § 211.57) or (2) issuance of an advisory opinion under Commission rule 211.54 (19 C.F.R. § 211.54) to allow or facilitate the importation of articles cast by the modified processes.[7]

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[4] *See* 48 Fed. Reg. 15963 (Apr. 13, 1983); 48 Fed. Reg. 43108 (Sept. 21, 1983); 49 Fed. Reg. 4047 (Feb. 1, 1984).

[5] Commission Action and Order of October 15, 1984. *See* Certain Amorphous Metal Alloys and Amorphous Metal Articles, Investigation No. 337-TA-143, USITC Publication 1664 (Nov. 1984); 49 Fed. Reg. 42083 (Oct. 24, 1984).

[6] *See generally* USITC Pub. 1664 — Unreviewed Initial Determination of May 14, 1984 (ID) at 44, 62-70; 49 Fed. Reg. 29159 (July 18, 1984).

[7] *See* Motion No. 143-86"C" filed February 22, 1985 (HML) and Motion No. 143-89"C" filed May 23, 1985. (Vac).

1987 ITC Determination

The Commission granted respondents' request and instituted advisory opinion proceedings under rule 211.54 to determine whether respondents' modified casting processes would infringe the '257 patent if those processes were practiced in the United States. The Commission also authorized consolidation of the HML and Vac advisory proceedings[8] and instituted exclusion order modification proceedings on its own motion to determine whether its exclusion order should be modified, vacated, or left unchanged. The Commission ordered that the modification proceedings be presided over by an ALJ who would conduct adversary proceedings, make findings of fact and conclusions of law, and issue a recommended determination (RD).[9]

On March 3, 1986, the presiding administrative law judge issued an initial advisory opinion together with findings of fact and conclusions of law concerning the respondents' modified casting processes. The IAO determined that HML and Vac now have the capability of manufacturing good quality wide amorphous metal strip in commercial quantities by casting processes that have been modified to avoid infringement of the '257 patent.[10] Allied and the Commission investigative attorney (IA) petitioned for review of the IAO on March 28, 1986.

On June 5, 1986, the Commission determined to review the IAO and to remand the advisory proceedings to the ALJ.[11] On remand, the ALJ was asked to provide additional findings as well as supplement the IAO with additional citations to the record and legal authorities. The Commission also referred a motion to the ALJ filed by Allied for admission of new evidence and sanctions against HML.[12] The Commission asked the ALJ

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[8] Commission Action and Order of July 26, 1985; Commission Action and Order of Sept. 11, 1985; 19 C.F.R. § 211.54(b).

[9] Commission Action and Order of July 26, 1985, 50 Fed. Reg. 31260 (Aug. 1, 1985); 19 C.F.R. § 211.57. Our determination in the modification proceedings will be issued in a separate opinion.

[10] IAO at 39.

[11] Commission Action and Order of June 13, 1986.

[12] *Id. See* Motion 143-120 "C".

to consider whether the new evidence should be admitted and, if admitted, whether it would change the findings in the IAO concerning HML or the recommendation given in the RD. On August 14, 1986, after completing an evidentiary hearing based on the new evidence, the ALJ issued additional findings. The ALJ did not, however, alter the determination of the IAO or the recommendation given in the RD.

II. The Parties

Allied Corporation, complainant in the *Amorphous Metals* investigation, is organized under the laws of New York and has its principal place of business in Morristown, New Jersey.[13] Respondent Hitachi Metals, Ltd. is a Japanese corporation located in Tokyo, Japan. Respondent Hitachi Metals International, Ltd., a subsidiary of Hitachi Metals, Ltd., is a domestic corporation located in White Plains, New York.[14] Respondent Vacuumschmelze GmbH is a German corporation with its main offices in Hanau, Federal Republic of Germany.[15] These respondents participated in the original investigation and were found to have been using processes to manufacture amorphous metal that, if practiced in the United States, would infringe the '257 patent.

III. History of the '257 patent[16]

On October 22, 1976, Allied filed a patent application with the U.S. Patent and Trademark Office (PTO) entitled "Continuous Casting Methods for Metallic Strips". This original application contained a set of claims to a strip of amorphous metal as well as sets of claims for both the method and apparatus used in producing the strip. Allied allowed the

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[13] ID-FF 6.

[14] ID-FF 7-8.

[15] ID-FF 12.

[16] *See generally* ID-FF 289-300.

original application to become abandoned and filed a continuation-in-part (CIP) application on August 2, 1977. The CIP application added new material to the specification that was filed with the original application and repeated the same three sets of claims that were presented in the original application. The PTO required Allied to limit its application to only one set of claims. Allied elected to prosecute its apparatus claims, and eventually was granted a patent for an apparatus used in producing amorphous metal strips (U.S. Letters Patent 4,142,571, issued March 6, 1979). On October 10, 1978, Allied filed a divisional application (based on the CIP application) which contained only process claims. On September 9, 1980, the divisional application matured into U.S. Letters Patent 4,221,257, entitled "Continuous Casting Methods for Amorphous Metallic Strips", the patent at issue in these proceedings.

ISSUE PRESENTED

Articles made by processes that would infringe the '257 patent, if practiced in the United States, are barred from entry by an exclusion order which was issued in October 1984 at the end of Inv. No. 337-TA-143.[17] The issue presented in these advisory proceedings is whether the importation of articles made by respondents' modified processes would be covered by the exclusion order issued in the original investigation.[18] This entails determining whether the modified processes would infringe the relevant claims of the '257 patent if the processes were practiced in the United States.

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[17] Commission Action and Order of October 15, 1984.

[18] Rule 211.54(b); 19 CFR 211.54(b).

1987 ITC Determination

INFRINGEMENT

Analysis of patent infringement entails two inquiries: determination of the scope of the claims, a question of law; and the factual finding of whether properly construed claims encompass the accused structures.[19] This analytical framework applies whether claims are asserted to be infringed literally or by application of the doctrine of equivalents.[20]

I. Determination of the Scope of the Claims

A. The Patent

The '257 patent discloses a "continuous casting method for metallic amorphous strips." The claims at issue are claims 1-3, 5, 8, and 12.

The broadest claim is claim 1, which reads as follows:

> 1. A method of forming continuous strip of amorphous metal from a molten alloy capable of forming an amorphous structure comprising:
>
> a. forcing the molten alloy under pressure through a slotted nozzle positioned generally perpendicular to the direction of movement of a chill surface and located in close proximity to the chill surface to provide a gap of from about 0.03 to about 1 millimeter between said nozzle and the chill surface;
>
> b. advancing the chill surface, at a predetermined speed; and

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[19] *Texas Instruments Inc. v. U.S.I.T.C.*, 231 U.S.P.Q. at 834 (citing *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d 1279, 1282, 230 U.S.P.Q. 45, 46 (Fed. Cir. 1986) and *Caterpillar Tractor Co. v. Berco, S.P.A.*, 714 F.2d 1110, 1114, 219 U.S.P.Q. 185, 187 (Fed. Cir. 1983)).

[20] *Texas Instruments*, 231 U.S.P.Q. at 834.

> c. quenching the molten metal in contact with the chill surface at a rapid rate to effect solidification into a continuous amorphous metal strip.[21]

Claims 2, 3, 5, and 8 each incorporate "the method of claim 1," and add various limitations on the process features recited in that claim. Claims 2, 3, 5, and 8 are dependent on independent claim 1. Claim 12 is an independent claim. Although claim 12 does not incorporate "the method of claim 1", it encompasses the elements of claim 1 and adds various limitations to the process features recited in that claim. Claim 1 is the broadest claim, and claim 12 is directed to the preferred embodiment of the '257 patent. Because claim 1 is the broadest claim, if it has not been infringed, neither have any of the other claims.

B. The Original Investigation

In the original investigation the Commission determined, among other things, that:

> 1. [T]he word "nozzle" as used in the '257 patent claims is ambiguous as to the structure of the nozzle, and . . . the specification can be used to construe this word. The '257 claims are construed as including the critical feature of the wide lips on the nozzle. Allied, however, must prove that each respondent has used this feature before infringement can be found.
>
> The '257 patent is not invalid under [35 U.S.C. § 112]. The claims read in the light of the specification particularly point out and distinctly claim the subject matter which the applicant regards as his invention.[22]

---

[21] For purposes of the '257 patent, a strip is a slender body with transverse dimensions that are much less than its length. This includes wire, ribbon, and sheets of regular or irregular cross-section. '257 Patent at Col. 1, lines 17-20.

[22] *Id.* at 44.

1987 ITC Determination

> 2. It is important at the outset to distinguish between a comparison of Narasimhan's [the inventor of the '257 patent] invention as he saw it (including the width of the lips of the nozzle supporting the molten metal) with the prior art, and a comparison of the claims of the '257 patent with the prior art. If the Narasimhan invention is compared with the prior art, the subject matter of the invention as a whole would not have been obvious to one with ordinary skill in the art at the time of the invention. If the '257 *claims* (read literally) are compared with the prior art, however, the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art of casting amorphous metal. The critical features of the Narasimhan invention relating to supporting the melt on the width of the lips of the nozzle can be read into the claims from the specification because the references to "nozzle" in the claims are ambiguous. The decisive comparison therefore is between the invention as set forth in the specification and the prior art.[23]
>
> 3. If the claims of the '257 patent are valid, it is only because the critical limitation relating to the width of the lips was read into the claims. If a respondent used a nozzle without wide lips, infringement could not be found.[24]

The Commission thus determined that if the claims of the '257 patent were read literally, they would be invalid under 35 U.S.C. § 103 for obviousness. The Commission, however,

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[23] *Id.* at 48.

[24] *Id.* at 64. (See generally, ID at 62-73 concerning infringement of the '257 patent, and ID-FF 446-553.)

construed the claims of the '257 patent to include the critical feature of wide nozzle lips on the casting nozzle, and determined that the claims so construed would not be invalid under 35 U.S.C. § 103. The Commission also found that the claims of the '257 patent were valid under 35 U.S.C. § 112, but only if read in light of the specification.[25] Finally, the Commission stated that if respondents used slotted nozzles without wide flat lips, they would not infringe the claims of the '257 patent as so construed.[26]

As discussed below, neither the characterization of the '257 invention as set forth in the ID nor the ID's determination concerning the validity of the '257 patent were subject to redetermination in these proceedings.

C. The Review

In its petition for review of the IAO, Allied argued that the Commission should not follow the characterization of the '257 invention set forth in the ID, but instead should characterize the "essence" of the invention as "melt support".[27] Allied argued that if anything were read into the claims it should have been "melt support", not wide lips on the casting nozzle.[28] Allied further argued that since the prior art was not shown to teach

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[25] 35 U.S.C. § 112, second paragraph states:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[26] *Id.* at 64.

[27] *See* generally, Allied's Petition for Review at 3, 30-34. Allied admits that during the advisory proceeding its counsel agreed not to relitigate the issues decided in the original proceedings. R-TR at 6432-6434. Allied argues, however, that it should not be held to that agreement because the IAO does not follow the ID. Allied Petition for Review at 9. Because this opinion eliminates any inconsistencies between the ID and the Commission's advisory determination, Allied's arguments based on inconsistencies between the ID and the IAO are irrelevant.

[28] Allied's Petition at 50; Allied's Reply in Support of its Petition at 41-48.

"melt support",[29] characterization of the '257 invention as "melt support" would result in a finding that the '257 claims are valid, as they were written, under 35 U.S.C. § 103.

We reject Allied's arguments for redetermining the scope and validity of the '257 patent claims. Under the doctrine of the law of the case, when a tribunal decides upon a rule of law in a case, that decision should continue to govern the same issues in subsequent stages in the same case.[30] This doctrine grants courts and administrative bodies the discretion to avoid wasteful relitigation of matters already decided by the tribunal where to do so would not work an injustice.[31] Allied had a full and fair opportunity to litigate the issues of the scope and validity of the '257 claims in the original investigation. Thus, it would not work an injustice to apply the doctrine of law of the case in these proceedings. We note that claim construction is a question of law,[32] and thus, the doctrine of the law of the case is applicable in these proceedings.[33]

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[29] Allied's argument to the contrary notwithstanding, the ID made no determination of whether the prior art taught melt support *per se*. That issue was not before the Commission in the original investigation. The Commission did, however, determine that the prior art did not teach supporting the melt on wide casting nozzle lips. We note that passages in the ID at 52, 54, and 55 did not refer to the wide lips in their discussion of the prior art. A reading of the entire ID, however, makes it clear that these passages referred to supporting the melt on wide nozzle lips, not supporting the melt *per se*.

[30] *Arizona v. California*, 460 U.S. 605, 618 (1983).

[31] *See generally*, 1B J. Moore & T Currier, Moore's Federal Practice, ¶0.404 (1984).

[32] *Molinaro v. Fannon/Courier Corp.*, 745 F.2d 651, 652, 223 U.S.P.Q. 706-07 (Fed. Cir. 1984).

[33] We note that the doctrine has frequently been applied to claim construction rulings in patent cases. *See, e.g., Stewart-Warner Corp. v. City of Pontiac*, 767 F.2d 1563, 1568, 226 U.S.P.Q. 676, 679 (Fed. Cir. 1985); *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 900-01, 221 U.S.P.Q. 669, 679 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 857 (1984); and *Stearns v. Beckman Instruments, Inc.*, 737 F.2d 1565, 1568, 222 U.S.P.Q. 457, 459-460 (Fed. Cir. 1984).

1987 ITC Determination

Apart from application of the law of the case to these proceedings, we note that Allied agreed not to litigate the issue of claim interpretation in the advisory opinion proceedings.[34] Indeed, at the conclusion of the original investigation, Allied embraced the claim interpretation necessary to preserve the '257 patent's validity in the original investigation.[35]

D. Claim Interpretation

In the original investigation, respondents were found to be using casting nozzles with relatively wide lips. Thus, infringement was found because respondents' processes were encompassed by the scope of the claims as interpreted in the ID (i.e. respondents' processes utilized relatively wide lips on a casting nozzle).[36] In the proceedings now before us, respondents claim that their modified processes employ nozzle lips that

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[34] AO-TR at 385-386. *See also* note 27.

[35] For example, Allied stated:

In short, the ALJ properly interpreted *Autogiro* and properly followed its holding. The ALJ found the word "nozzle" to be ambiguous and used the patent specification to *construe* this word to include "wide lips". The fault is not with the decision of the ALJ, but with the obvious mischaracterization of that holding by Respondents. No review of this issue is necessary.

Allied Response to Respondent's Petition for Review of the Initial Determination at 5.

* * * * *

At page 44 of the ID the ALJ has correctly found that "[t]he '257 claims are construed as including the critical feature of the wide lips on the nozzle." The ALJ did not read Dr. Narisimhan's melt constraint or support result or theory into the '257 process claims. The ALJ went into great detail at pages 62-66 of the ID to explain why it was not necessary for Allied to prove that the Vacuumschmelze wide lips supported or constrained the melt. All that was required from Allied was to show, which it did, that the Vacuumschmelze nozzles have wide lips. (ID 64 and 66).

Allied's Response to Respondents' Petition for Review of the Initial Determination, at 16.

[36] ID at 62-70.

are too narrow to be covered by the claims of the '257 patent as interpreted by the Commission. Thus, respondents raise an issue in the advisory proceedings that was not litigated before the Commission in the original investigation, viz., whether casting processes utilizing narrow nozzle lips infringe the '257 patent.[37] We intend that our resolution of this issue be consistent with the characterization of the invention found in the ID.

As we determined in the original investigation, the term "nozzle" as used in the '257 patent claims is ambiguous as to the structure of the nozzle. To resolve this ambiguity we looked to the '257 patent specification labeled "Summary of the Invention" describes the nozzle thusly: "The slot is defined by a pair of generally parallel lips, a first lip and a second lip, numbered in direction of movement of the chill surface. The slot must have a width, measured in the direction of movement of the chill surface, of from about 0.3 to about 1 millimeter."[38] "The first [nozzle] lip must have a width at least equal to the width of the slot, and the second [nozzle] lip must have a width of from about 1.5 to about 3 times the width of the slot."[39] We note that the width of the lips of the nozzle is expressly described in the patent specification as a "critical parameter".[40]

We also note that the memorandum of invention filed with Allied's patent department recited specific width limitations for the nozzle lips.[41] In addition, the testimony of Dr. Narasimhan, the inventor of the '257 process, indicates that the width of the nozzle lips is a critical feature of the '257 process.[42] Finally,

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[37] Although the issue was not litigated, the ID stated in dicta "If a respondent used a nozzle without wide lips, infringement could not be found." ID at 64.

[38] '257 patent Col. 3, lines 37-42.

[39] '257 patent Col. 3, lines 50-53.

[40] '257 patent Col. 3, 49-50.

[41] ID-FF 332, AO-FF 17.

[42] *See,* ID at 35; Narasimhan deposition taken November 11, 1983, (Allied Exhibit CF) at 65-85, 119-128; and AO-TR 18-22.

Allied's patent counsel advised an Allied employee, Mr. Wellslager, that he (Wellslager) could not be considered a co-inventor of the Narasimhan process *only* because Wellslager had not disclosed the *specific configuration of the nozzle lips* that Narasimhan had discovered.[43] Based on the foregoing, we reaffirm that the scope of the '257 patent covers processes for casting amorphous metals which utilize the critical feature of relatively wide nozzle lips. We further construe the wide nozzle lips to be of the dimensions set forth in the "Summary of the Invention" found in the '257 patent specification.

II. Literal Infringement.

Literal infringement requires that the accused device or process embody every element of properly interpreted claims.[44] For the respondents to literally infringe the claims of the '257 patent, their processes must utilize casting nozzles with back nozzle lips that are at least equal to the width of the nozzle slot and front nozzle lips that are from about 1.5 to about 3 times the width of the nozzle opening. We construe the word "about" to allow a variance of up to .05 at the lower end of the front nozzle lip ratio range.[45] Thus, in order for respondents' processes to literally infringe the claims of the '257 patent, they must utilize a front casting nozzle lip that is at least 1.45 times as wide as the width of the casting nozzle's slot. We do not determine the upper range of nozzle lips that fall within the scope of the '257 patent. That issue is not before us.

* * *

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[43] ID-FF 364.

[44] *See Mannesmann Demag Corp. v. Engineered Metal Products,* 793 F.2d at 1282, 230 U.S.P.Q. at 46.

[45] Expert testimony indicates that the word "about" used with a number containing two significant figures, such as 1.5, should be interpreted to mean that the figure has a variance of two significant figures, in this case, .05. AO-TR at 486. "[A]bout 1.5" would thus cover ratios of from 1.45 to 1.55.

ALJ's Opinion On Remand
August 14, 1986
Excerpts Pages 56-57
PUBLIC VERSION

UNITED STATES INTERNATIONAL
TRADE COMMISSION
Washington, D.C.

In the Matter of
CERTAIN AMORPHOUS METAL ALLOYS
AND AMORPHOUS METAL ARTICLES

Investigation
No. 337-TA-143

FINDINGS ON HEARING ON NEW EVIDENCE AND INFORMATION REQUESTED ON REMAND

* * *

It is recommended that the change suggested by Nippon Steel, with which HML agrees, be made in the proposed exclusion order. This change would eliminate the upper limitation on the width of the nozzle lips. It would be easier for Customs to enforce the exclusion order if it had to look only at the minimum dimensions of the width of the nozzle lips and the slot. The product could be imported only if these dimensions were outside of the scope of the '257 patent. Allied would not have to prove that products with wider nozzle lips infringed under the doctrine of equivalents, and it would be easier for the Commission if it did not have to decide in each case how wide the nozzle lips could be and still infringe the '257 patent under the doctrine of equivalents. Anyone using extremely wide nozzle lips could request an advisory opinion from the Commission if he believed that the nozzle he intended to use did not infringe the '257 patent under the doctrine of equivalents.

ALJ's Initial Advisory Opinion
March 3, 1986
Excerpts Pages 10-12, 21-22, 39

[PUBLIC VERSION #2]

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN AMORPHOUS METAL ALLOYS AND AMORPHOUS METAL ARTICLES

Investigation No. 337-TA-143

INITIAL ADVISORY OPINION

* * *

Pages 10-12

In the summary of the invention in the patent specification, the *slot must have a width,* measured in direction of movement of the chill surface, *of from about 0.3 to about 1 millimeter.* The width of the lips is expressly described as a "critical parameter." *The first lip must have a width at least equal to the width of the slot,* and *the second lip must have a width of from about 1.5 to about 3 times the width of the slot.* It is by means of these wide lips that the "molten metal is mechanically supported on a chill surface" as the invention was summarized in lines 11 and 12 of column 3. [Emphasis in original].

Later in the patent specification (in the columns giving a detailed description of the invention and the preferred embodiments), the inventor describes his concept of how his invention works. The description of the way in which the molten metal is "supported" by the lips of the nozzle does not describe the structure or shape of the "nozzle," the only word that had been found to be ambiguous in claim 1. The back lip is described as supporting the melt essentially by the "pumping action" of the melt resulting from constant removal of solidified strip. The specification indicates that the rate of flow (of the melt) is controlled by the forming solidification front and the front lip

that mechanically supports the molten metal below it. In this embodiment of the invention, the melt is supported between the first nozzle lip and the solidification front, rather than between the first nozzle lip and the chill surface itself.

This part of the specification also gives the preferred measurements of the nozzle lips within the required ranges. It provides that the back lip must be at least about equal to the width of the slot, preferably at least about 1.5 times the width of the slot. If the back lip is too narrow, according to the specification the molten metal will tend to ooze out, and no strip or only irregular strip will be formed. The specification also indicates that in the preferred embodiment the front lip should be *about* 1.5 to *about* 3 times the width of the slot, and that if this lip is too narrow, it will fail to provide adequate support to the molten metal and only discontinuous strip will be produced. The suggested preferred embodiments and description of how the inventor thinks that "melt support" works in this part of the specification are not essential elements of the Narasimhan invention.

There is nothing in claim 1 that clearly refers to supporting the melt in any context. There is nothing ambiguous in claim 1 that could be construed as requiring the melt to be "supported" in some manner between the bottom of the lips of the nozzle and the chill surface. Claim 1 broadly claimed a method of forming amorphous metal strip by forcing molten alloy through a slotted nozzle positioned close to the moving chill surface. The essential and novel elements of the Narasimhan invention are not even hinted at in claim 1.

To be consistent with the description of the invention in the "summary of the invention," the Commission construed the ambiguous word "nozzle" in claim 1 as requiring the back lip of the nozzle (lip 1) to have a width at least equal to the width of the slot, and as requiring the front lip (lip 2) to have a width of from about 1.5 to about 3 times the width of the slot. (The approximate measurements of the slot are also described in the summary of the invention in the specification as an essential

part of the nozzle measurements and a required part of the invention, and also are read into the ambiguous word "nozzle" in claim 1.)

* * *

Pages 21-22

For literal infringement of the '257 patent, the nozzle opening must be at least about 0.3 to about 1 millimeter wide. The width of the back nozzle lip must be at least equal to the width of the nozzle opening. The width of the front lip must be from *about* 1.5 to *about* 3 times the width of the nozzle opening. [Emphasis in original].

Dr. Grant testified that the word "about" would allow a variance of up to .05, in the context of numbers with two significant figures, such as 1.5. Thus, a variance in the ratio of lip width to slot width of .05 would be allowed for the front lip of the nozzle. A front lip that is 1.45 times the width of the nozzle opening would be covered by the '257 patent.

The Narasimhan invention called for a back lip wider than the slot opening to prevent the melt puddle from being broken up by the air coming around the wheel, and to prevent extra melt from oozing out. The word "about" was not used for the back nozzle lip. A back lip less wide than the width of the slot opening would not be expected to work in the way the specification described the function of the back lip, unless other factors had changed, for example if the melt puddle had become smaller and the pressure on the melt had decreased. In other words, a process using a back lip more narrow than the width of the nozzle opening probably would be different from the one invented by Dr. Narasimhan, and if it worked, it would not be because of Dr. Narasimhan's invention.

* * *

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Nozzle openings greater than about one millimeter in width fall outside of the scope of claim 1, because the summary of the invention in the patent specification states that the slot *must* have a width of about 0.3 to about 1 millimeter. [Emphasis in original].

ALJ's Initial Determination
May 14, 1984
Excerpts Pages 34-44, 48, 64

PUBLIC VERSION

UNITED STATES INTERNATIONAL
TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN AMORPHOUS METAL ALLOYS AND AMORPHOUS METAL ARTICLES

Investigation No. 337-TA-143

INITIAL DETERMINATION

* * *

Pages 34-44

(a) What subject matter did Narasimhan regard as his invention?

Dr. Narasimhan believed that he was successful only when the nozzle was a short distance from the surface of the moving chill wheel because the molten metal was supported in part by the flat lips of the nozzle. The ribbon began to solidify when it touched the surface of the chill wheel. Because the melt was supported between the flat lips and the wheel surface, the force of the air moving around the swiftly moving wheel did not break up the molten metal before it solidified. The metal solidified after it moved away from the front lip of the nozzle and touched the chill wheel. As Dr. Narasimhan described his invention, the way in which he solved the problem of unsupported molten metal coming out of the crucible at uncontrolled speed was to use adjustable pressure on the molten metal in the crucible and a narrow slotted nozzle as an outlet for the molten metal, and to force the metal out of the nozzle at a controlled rate, while the molten metal was supported partially by the width of the lips of the nozzle. While the molten metal was held under the front and back lips of the nozzle, it was still

molten. The molten metal solidified and formed a ribbon when it touched the chilled wheel surface and was pulled away. When the nozzle was too far from the wheel, the molten metal would break up and spatter. When the nozzle was too close to the wheel, the molten metal touched the wheel surface too soon, the metal would solidify too soon, the wheel would stick on the crucible nozzle, and no ribbon would be formed. (TR 794-800, 812, 905, 910, 917).

[*] (Allied Ex. 329) Dr. Narasimhan also testified at his deposition that the lips, the dimensions, and the way the nozzle was structured provided the support for the melt pool in his process.

Dr. Narasimhan first named his process the "Supported Melt Drag Process." (TR 838-839, 908, 595). He testified that the melt is supported between the front lip and the "solidification" front, and between the back lip and the beginning of the ribbon before it had solidified.

Dr. Narasimhan considered that the critical aspects of his invention included the wide back lip of the nozzle that held the melt as it came out of the slot and the wide front lip that provided support for the melt on the front side before it touched the wheel surface, solidified into ribbon, and was carried away by the movement of the wheel. In the Narasimhan process the melt pool is supported between the rapidly moving "solidification front" and the stationary front lip of the nozzle opening. The melt must be supported by both the front and back lips.

Allied's Patent Department agreed that this support was critical to the Narasimhan invention.[*] Mr. Wellslager had worked with Mr. Bedell on casting of amorphous metal strips and had recognized that problems such as turbulence, heat loss and oxidation could be eliminated by moving the crucible up to the wheel as close as possible. (Ex. P-434, at 45). Before Dr.

* "Confidential Business Information" Deleted

Narasimhan came to Allied, Mr. Wellslager had tested this idea in a device using solder as the melt. (TR 685. Solder was commonly used at Allied to test ways for casting amorphous metal.)[*] Several years later, Mr. Wellslager was told by Allied patent attorney Gerhard Fuchs that he could not be considered a co-inventor of the Narasimhan process because Wellslager had not disclosed the specific configuration of the lips discovered by Narasimhan. (Ex. P-708, TR 4324-4333).

Allied recognized in this proceeding that this feature is critical to the Narasimhan invention. On pages 93 and 94 of the Allied brief complainant points out that Dr. Narasimhan discovered that if the molten metal alloy could be constrained or supported, to keep it from breaking apart before it solidified, this would allow the production of continuous wide amorphous metal strip. Allied's brief points out that Dr. Narasimhan discovered that by forcing the molten metal under pressure through a slotted nozzle less than 1mm from a chilled surface, the melt became constrained or supported between the front and back lips of the slotted nozzle and the ribbon as it began to solidify on the chilled surface.

The width of the lips of the nozzle, and the use of these lips to support or constrain the molten metal was and still is considered by the inventor and by Allied to be critical to the invention. This is part of the "subject matter" that the applicant regarded as his invention.

(b) Do the claims in the '257 patent include this subject matter?

Claims 1-5, 8 and 12 of the '257 method patent are in issue in this case. These claims read as follows:

> 1. A method of forming continuous strip of amorphous metal from a molten alloy capable of forming an amorphous structure comprising:
>
> a. forcing the molten alloy under pressure through a slotted nozzle positioned generally

* "Confidential Business Information" Deleted

perpendicular to the direction of movement of a chill surface and located in close proximity to the chill surface to provide a gap of from about 0.03 to about 1 millimeter between said nozzle and the chill surface;

b. advancing the chill surface, at a predetermined speed; and

c. quenching the molten metal in contact with the chill surface at a rapid rate to effect solidification into a continuous amorphous metal strip.

2. The method of claim 1 wherein the chill surface is advanced relative to said nozzle at a velocity of from about 200 to about 2000 meters per minute.

3. The method of claim 1 wherein the molten alloy is quenched at a rate of at least 10^{4}° C. per second.

4. The method of claim 1 wherein the slotted nozzle is located in close proximity to the chill surface to provide a gap of from about 0.03 to about 0.25 millimeter between said nozzle and the chill surface.

5. The method of claim 1 wherein the slotted nozzle has a width of from about 0.03 to about 1 millimeter, measured in direction of movement of the chill surface.

* * *

8. The method (sic) claim 1 wherein the chill surface is provided by a rotating chill roll, and the molten alloy is deposited onto its peripheral surface.

* * *

12. The method of forming continuous strip of amorphous metal from a molten alloy capable of forming an amorphous structure, comprising:

(a) forcing the molten metal under pressure through a slotted nozzle onto the peripheral surface of a chill

roll, wherein said nozzle is located in close proximity to said peripheral surface such that the gap between the nozzle and said peripheral surface is from about 0.03 to about 1 millimeter, wherein the nozzle has a width of from about 0.3 to about 1 millimeter, measured in the direction of rotation of the chill roll, and wherein the nozzle is positioned generally perpendicular to the direction of the chill roll;

(b) rotating the chill roll at a predetermined speed to provide a peripheral velocity of from about 200 to about 2000 meters per minute; and

(c) quenching the molten metal in contact with the peripheral chill roll surface at a rate of at least about 10^4° C. per second to effect liquidification into a continuous amorphous strip.

The claims of the '257 patent do not mention anywhere the width of the lips of the nozzle, or the dimensions of these lips, or their supporting or constraining function.

(c) Are features of the invention that are not included in the claims critical to the invention?

The file history of the '571 apparatus patent shows that to overcome the objections of the Examiner, Allied argued that the dimensions of the slotted nozzle were critical. In connection with that patent application, the width of the slot and of the lips and the gap between the lips and the chill surface were described as critical and critically interrelated. Each of the claims of the '571 apparatus patent included dimensions for the width of the lips, but no mention is made in the claims of the other two patents of dimensions for the width of the lips.

On August 17, 1979, Allied amended its application for the method or process claims (resulting in the '257 patent), and argued that the new claims were patentable over the prior art because prior art did not teach the use of a slotted nozzle or the close spacing between a nozzle and a chill surface, or how to

cast amorphous metal. (Ex. P-450). During the prosecution of this patent application Allied did not argue that the width of the lips was critical to the Narasimhan *process,* as it had argued in connection with the Narasimhan *apparatus,* but the '257 patent specification still states that the width of the lips is critical.

The specification for all three patents is about the same. It refers to mechanically supporting the molten metal on a chill surface. It states that the width of the lips is a "critical parameter," and that the first lip has a lip at least equal to the width of the slot, and the second lip has a width from about 1.5 to about 3 times the width of the slot. The slot must have a width of from about 0.3 to about 1 millimeter. (Allied Ex. 19, col. 3, 6, 7).

At the time of prosecuting the application for the '257 process patent Allied must have considered the width of the lips of the nozzle to be critical to the Narasimhan process because the specification describes it as critical, and Allied's Patent Department had taken the position that it was critical.

(d) Can the critical features of the invention be read into the claims?

Ambiguous claims can be clarified by a reading of the specification but the failure of *unambiguous* claims to include a critical aspect of the invention may be fatal to the patent under Sections 103 and 112.

The '257 patent specification indicates that the lips must have a certain width relative to the width of the slot of the nozzle, and the figures in the patent show examples of the width of the lips relative to the size of the slot. (Figures 1, 4, 6 and 7).

The claims of the '257 patent do not mention the width of the *lips* of the nozzle at all. (Claim 12 defines "the width of the nozzle," between about 0.3 to about 1 millimeter, measured in the direction of rotation of the chill wheel. This refers to the

opening or slot of the nozzle, rather than the width of the lips on both sides of the opening or slot.)

Allied repeatedly argued in this case that the step of "supporting the melt puddle" is critical to the invention, but this step is not mentioned in the '257 claims, and this step was not pointed out as critical to the Examiner in the file history. The specification can be used to clarify an ambiguity in the claim, but it cannot be used to add an additional critical element or step into an unambiguous claim.

One with ordinary skill in the art, however, would have known from reading the '257 patent specification file history that a nozzle with wide lips was critical to the invention.

A critical limitation cannot be "read into" unamibiguous claims even though the features are described as critical in the specification. The specification may be utilized to interpret ambiguous words or phrases in the claims, but the specification cannot be used to supply a missing element or step. An unambiguous claim which is silent as to a limitation necessary not only to practice an invention but to distinguish the claim over the prior art may be invalid under Section 103 if other documents cannot be used to read the limitation into the claim.

In *SSIH Equipment v. U.S. I.T.C.*, 218 U.S.P.Q. 678, 689, 718 F.2d 365, 378 (Fed. Cir. 1983), the complainant asked the court to "resort to the specification" to add a limitation to a claim. The court refused, because the specification disclosed the limitation in one embodiment but disclosed another embodiment without the limitation. (Footnote 20, at 378). The present case can be distinguished from the facts in *SSIH Equipment* because no embodiment without the lips supporting the melt is disclosed in the specification.

The court in *SSIH Equipment* stated: " . . . we cannot alter what the patentee has chosen to claim as his invention," citing *Autogiro Co. of America v. U.S.*, 155 USPQ at 701 (Ct. Cl. 1967), and the cases cited therein.

ALJ's Initial Determination

In *Autogiro*, the Court of Claims stated that the claims of the patent provide the concise formal definition of the invention. "Courts can neither broaden nor narrow the claims to give the patentee something different than what he has set forth." (155 USPQ at 701). The court stated:

> Although courts are confined by the language of the claims, they are not, however, confined to the language of the claims in interpreting their meaning. Courts occasionally have confined themselves to the language of the claims. When claims have been found clear and unambiguous, courts have not gone beyond them to determine their content. . . . Courts have also held that the fact that claims are free from ambiguity is no reason for limiting the material which may be inspected for the purpose of better understanding the meaning of claims. 155 USPQ 701.

Although the language used by the court in *Autogiro* supports a literal reading of unambiguous claims, the court concluded that claims cannot be clear and unambiguous on their face. (at 702). It found that a claim cannot be interpreted without going beyond the claim itself, and that claims are best construed in connection with other parts of the patent. The court then inspected "all useful documents" to reach what Justice Holmes called the "felt meaning" of the claim. These documents included the specification, the drawings and the file wrapper. (at 702). In the present case, the specification and drawings suggest that the width of the lips *is* critical to the invention as set forth in the patent claims. Only the file wrapper suggests that it is not critical to this patent. To practice the invention, one would be likely to read the patent claims and specification, but one would not be likely to read the file wrapper. One with ordinary skill in the art would be told by the patent specification that the structure of the lips of the nozzle was critical to the invention.

ALJ's Initial Determination

After the court in *Autogiro* construed the claims in the light of the specification, it indicated that *literal infringement* of the claim language would not be enough to prove infringement. The infringing structure must do the same work, in substantially the same way, and accomplish substantially the same result, as described in the specification before infringement will be found.

It is found that the word "nozzle" as used in the '257 patent claims is ambiguous as to the structure of the nozzle, and that the specification can be used to construe this word. The '257 claims are construed as including the critical feature of the wide lips on the nozzle. Allied, however, must prove that each respondent has used this feature before infringement can be found.

The '257 patent is not invalid under Section 112. The claims read in the light of the specification particularly point out and distinctly claim the subject matter which the applicant regards as his invention.

* * *

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It is important at the outset to distinguish between a comparison of Narasimhan's invention as he saw it (including the width of the lips of the nozzle supporting the molten metal) with the prior art, and a comparison of the claims of the '257 patent with the prior art. If the Narasimhan invention is compared with the prior art, the subject matter of the invention as a whole would not have been obvious to one with ordinary skill in the art at the time of the invention. If the '257 *claims* (read literally are compared with the prior art, however, the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art of casting amorphous metal. The critical features of the Narasimhan invention relating to supporting the melt on the width of the lips of the nozzle can be read into the claims from

the specification because the references to "nozzle" in the claims are ambiguous. The decisive comparison therefore is between the invention as set forth in the specification and the prior art.

* * *

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If the claims of the '257 patent are valid, it is only because the critical limitation relating to the width of the lips was read into the claims. If a respondent used a nozzle without wide lips, infringement could not be found.

[*] Allied failed to prove that in the VAC process *or* in the Allied process the melt is in fact supported by the wide lips of the nozzle. The only direct testimony on this point is Dr. Hilzinger's, and he testified that there was no such melt support. His testimony was not supported or contradicted in the record by documentary evidence or photographs. The other testimony on this point was based on Dr. Narasimhan's theory about why his process worked.

In attempting to prove that the '257 patent was invalid, VAC was unable to overcome the presumption of validity. Respondents failed to meet their burden of proof that the Narasimhan process, including a nozzle with wide lips described as "critical" in the specification, did not constitute a novel advance over the prior art. The improvement in wide amorphous strip made by the Narasimhan process was recognized by Dr. Hilzinger.

Allied has the burden of proving infringement. One using the '257 patent process was told in the specification that it was critical to use wide lips on the nozzle. The '257 patent specification does *not* advise the reader that in order for the process to work he must make sure that the melt is always held on the flat lips of the nozzle.

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* "Confidential Business Information" Deleted

ALJ's Findings Attached To
Initial Determination
May 14, 1984
Excerpts

336. The specification of the '257 patent describes the width of the lips as a "critical parameter." (Allied Ex. 18, col. 3). The minimum width of the first and second lip are given in the specification. (See Allied Ex. 20, col. 3, col. 6, and Fig. 1, 4, 6 and 7).

* * *

415. By construing the term "slotted nozzle" in accordance with the discussions in the specification, the phrase refers to a slot with two lips located on the bottom of the crucible on the surface closest to the chill wheel. (Allied Ex. 20 at col. 3, lines 35-48, col. 4, lines 2-4, col. 4, lines 48-53, and col. 7, lines 59-60; TR 818, 925 and 969).

416. The term "slotted nozzle["] includes a front lip and back lip of sufficient width to support the molten metal as illustrated in the Figures of the '257 patent and as described at col. 5, lines 1-20. (Allied Ex. 20).

* * *

439. The specification of the '257 patent recites certain dimensions concerning the lips of the slotted nozzle as critical to the operation of the Narasimhan invention. The '257 patent specification states that:

> The width of the lips measured in the direction of movement of the chill surface, is a critical parameter. The first lip has a width at least equal to the width of the slot. The second lip has a width of from about 1.5 to about 3 times the width of the slot.

(Ex. P-449, Col. 3, lines 49-53).

ALJ's 1984 Findings

440. None of the claims of the '257 patent refers in any way to the width of the lips of the slotted nozzle used in the process. The claims refer to the slotted nozzle, however, and the structure of the nozzle is not clear without a reading of the specification.